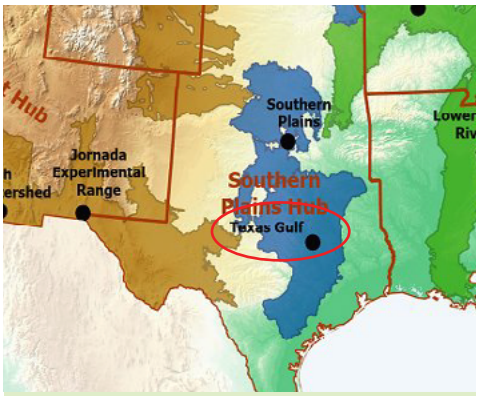
TEXAS GULF COAST (TGC)



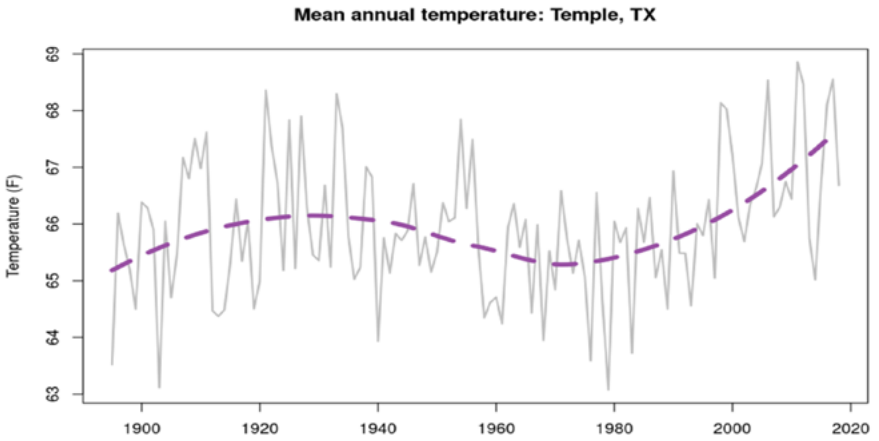
LTAR Network and USDA Climate Hubs are working to develop knowledge and technology for sound resource management **via research with partners.** The goal is to ensure **sustained crop and livestock production and ecosystem services** from agroecosystems, and to forecast and verify the effects of environmental changes, public policies, and emerging technologies.

Region

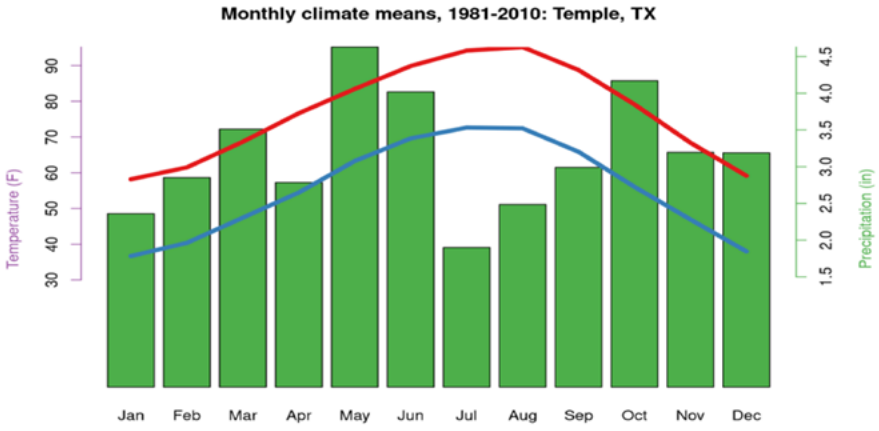
The Texas Gulf Coast (TGC) occupies the southern extent of the pre-settlement tallgrass prairie. Row cropping and livestock grazing are dominant land uses, both of which are threatened by urban expansion.

Climate

Climate in the TGC is sub-humid. Mean annual temperature is 67° F having increased during the last 40 years. Precipitation averages 35 inches annually with peaks in spring and autumn and declines from the southeast to northwest. Summer months typically are hot and dry.



Average temperature for Oct-Sept season as compared to mean temperature (1900-2020) (credit: Climate Toolbox).



Max and Min temperature and mean precipitation 1981 -2010 (credit: Climate Toolbox).

Current Challenges to Agriculture

Agricultural productivity is challenged by high temperatures and evaporative demand during summer coupled with large intra- and inter-annual variability in precipitation and frequent extremes (droughts, floods). Precipitation extremes impede management activities and promote soil erosion. Management flexibility is limited because landholdings typically are small. Forage availability is limited and forage quality poor during mid-summer and winter months. Climate models project an increase of 3.5-4.5° F in the TGC by mid-century with little change in precipitation. Warmer temperatures would intensify periods of drought by increasing evaporative demand.

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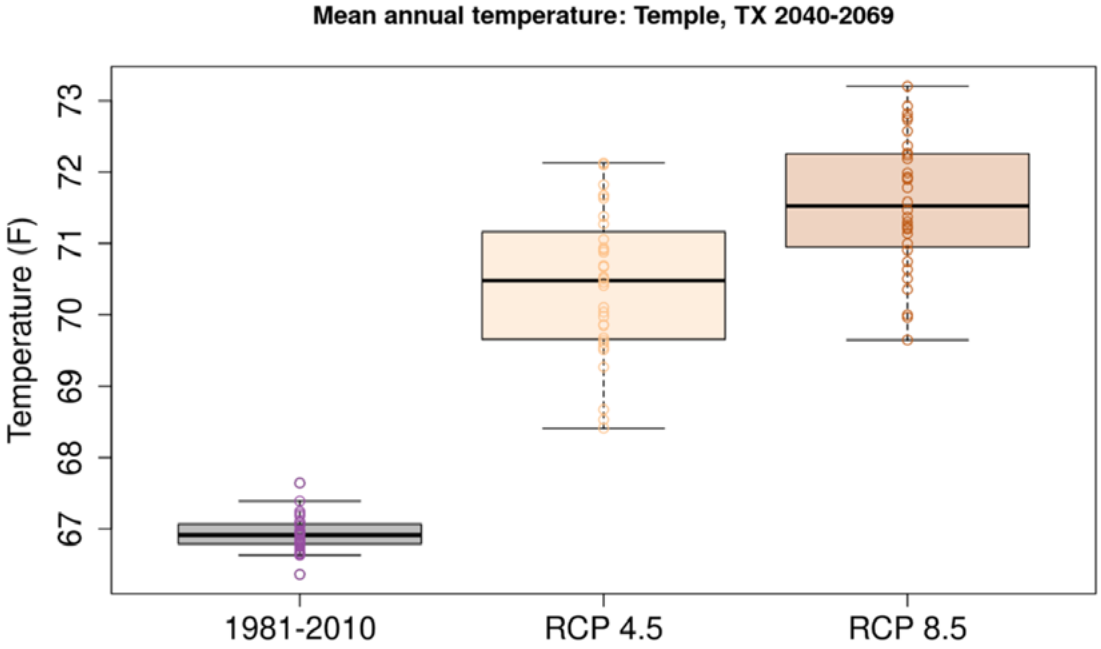

Balancing Sustainable Management and Rural Prosperity

Multiple challenges exist to balance environmental quality and agricultural sustainability with agricultural profitability and rural prosperity. Current business as usual practices increase soil erosion, reduce runoff water quality, diminish soil health and productive capacity, and increase greenhouse gas emissions. Technical and information-intensive methods will be required to balance sustainability of productive lands and rural economies in the face of urban encroachment and warmer temperatures.

To manage land sustainably, consider weather and climate.

Cropping Systems

Develop and implement precision agricultural techniques that reduce inputs and soil erosion and improve soil health in cropping systems.

Grazing Systems

Develop grazing systems and practices that maximize the seasonal duration of green cover on pastures, minimize required supplemental feeding, and improve forage quality.

Specific Stategies

Strategies include the use of remote sensing techniques with near real-time feedback to managers, near-term weather forecasts, off-season cover crops, increased plant species or genetic diversity, and seasonal adjustments in rates of cattle rotation among pastures.

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